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PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE

(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

HYDEN, Martin
Etudes et Productions Schlumberger
1, rue Henri Becquerel
F-92142 Clamart Cedex
FRANCE

Date of mailing (day/month/year) 13 July 2001 (13.07.01)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 55.0209	
International application No. PCT/EP00/09203	International filing date (day/month/year) 19 September 2000 (19.09.00)

1. The following indications appeared on record concerning: <input type="checkbox"/> the applicant <input type="checkbox"/> the inventor <input checked="" type="checkbox"/> the agent <input type="checkbox"/> the common representative		
Name and Address MENES, Catherine Etudes et Productions Schlumberger Division Dowell 26, rue de la Cavée BP 202 F-92142 Clamart Cedex France	State of Nationality	State of Residence
	Telephone No. 33 1 45 37 22 53	
	Facsimile No. 33 1 45 37 20 10	
	Teleprinter No.	
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning: <input checked="" type="checkbox"/> the person <input checked="" type="checkbox"/> the name <input checked="" type="checkbox"/> the address <input type="checkbox"/> the nationality <input type="checkbox"/> the residence		
Name and Address HYDEN, Martin Etudes et Productions Schlumberger 1, rue Henri Becquerel F-92142 Clamart Cedex France	State of Nationality	State of Residence
	Telephone No. 33 1 45 37 22 53	
	Facsimile No. 33 1 45 37 20 10	
	Teleprinter No.	
3. Further observations, if necessary: The new agent, and new agent's address on the Demand has been considered as a change under Rule 92bis. In case of disagreement, the International Bureau should be notified immediately.		
4. A copy of this notification has been sent to: <input checked="" type="checkbox"/> the receiving Office <input type="checkbox"/> the designated Offices concerned <input type="checkbox"/> the International Searching Authority <input checked="" type="checkbox"/> the elected Offices concerned <input checked="" type="checkbox"/> the International Preliminary Examining Authority <input type="checkbox"/> other:		

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer A. Karkachi Telephone No.: (41-22) 338.83.38
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PCT/EP00/09203

PATENT COOPERATION TREATY

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NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE
in its capacity as elected Office

Date of mailing (day/month/year)
13 July 2001 (13.07.01)

International application No.
PCT/EP00/09203

Applicant's or agent's file reference
55.0209

International filing date (day/month/year)
19 September 2000 (19.09.00)

Priority date (day/month/year)
07 October 1999 (07.10.99)

Applicant

LE ROY-DELAGE, Sylvaine et al

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

26 April 2001 (26.04.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

A. Karkachi

Telephone No.: (41-22) 338.83.38

REC'D 17 DEC 2001

WIPO

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

12



Applicant's or agent's file reference WO 55.0209	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP00/09203	International filing date (day/month/year) 19/09/2000	Priority date (day/month/year) 07/10/1999
International Patent Classification (IPC) or national classification and IPC C04B28/02		
Applicant SOFITECH N.V. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 26/04/2001	Date of completion of this report 13.12.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Harbron, J Telephone No. +49 89 2399 8453 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/09203

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-3,5-14 as originally filed

4,4a as received on 23/11/2001 with letter of 22/11/2001

Claims, No.:

1-11 as received on 23/11/2001 with letter of 22/11/2001

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP00/09203

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:
see separate sheet

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-11
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-11
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-11
	No:	Claims	

2. Citations and explanations
see separate sheet

R Item I

Basis of the report

1. The amendments filed with the letter of 22.11.2001 are considered to be allowable (Art. 34(2)(b) PCT).

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

2. Document D1 not considered to be prior art in the sense of Rule 64(3) PCT.
3. Although D2 discloses haematite as a "conventional" weighting additive, there is no prior art suggesting the use of such in well cementing compositions of the type disclosed in the application. The application is therefore considered to be novel and inventive over the cited prior art (Art. 33(1) PCT).

properties of hardened cements, in particular to improve their elasticity and ductility.

In its French patent application number FR-A-98 16104 dated 21st December 1998, the Applicant
5 describes lightened oil cements reinforced with flexible particles, of low compressibility, with low density, and with an average particle size not exceeding 500 micrometers (μm). The density of the flexible particles is less than 1.5 grams per cubic meter (g/cm^3),
10 preferably less than 1.2 g/cm^3 and more preferably less than 1 g/cm^3 . That results in lightened cement slurries. All of the examples given in French patent application FR-A-98 16104 correspond to a slurry with a density of less than 1.68 g/cm^3 .

15 Further, in patent application FR-A-98 12538, the Applicant also describes cement slurries with a density of less than 1.70 g/cm^3 comprising 30% to 100% (by weight of cement) of rubber particles, with a grain size of 40-60 mesh with a diameter which is preferably in the range
20 250 μm to 400 μm .

EP-A-0 196 689 discloses a cementing composition for use in cementing wells traversing salt formations, the compositions optionally including weighting agents such as hematite.

25 As indicated above, a reduction in slurry density tends to encourage its flexibility and is thus usually desired. However, low density may not be desirable in particular when the pressure is high due to the formation or to the nature of other fluids pumped downstream or
30 upstream of the lightened slurry.

The authors of the present invention have set themselves the target of producing cementing slurries reinforced by flexible or rubber particles with a low density, but with the density of the slurries themselves
35 being normal for cementing slurries for oil wells or the like, i.e., typically in the range 1.7 g/cm^3 to 2.2 g/cm^3 .

4a

According to the invention, the problem is solved by cementing slurries for an oil well or the like comprising an hydraulic binder, dense particles with a density
5 higher than the density of the hydraulic binder and reinforcing particles with a density of less than 1.5

CLAIMS

1. A cementing composition for an oil well or the like, comprising an hydraulic binder, dense particles with a density higher than the density of the hydraulic binder, and reinforcing particles constituted by a rubber or a flexible material, characterized in that the reinforcing particles have a density of less than 1.5 g/cm^3 , are of low compressibility and have an average grain size of less than $600 \mu\text{m}$.
2. A cementing composition as claimed in claim 1, wherein the reinforcing particles have a density of less than 1.2 g/cm^3 .
3. A cementing composition according to claim 1, characterized in that the dense particles are haematite particles.
4. A cementing composition according to any preceding claim, characterized in that the Young's modulus of the material constituting the reinforcing particles is less than 5000 MPa , preferably less than 3000 MPa , more preferably less than 2000 MPa .
5. A cementing composition according to any preceding claim, characterized in that the Poisson ratio of the material constituting the reinforcing particles is more than 0.3 .
6. A cementing composition according to any preceding claim, characterized in that the average size of the reinforcing particles is in the range $80 \mu\text{m}$ to $600 \mu\text{m}$, preferably in the range $100 \mu\text{m}$ to $500 \mu\text{m}$.
7. A cementing composition according to any preceding claim, characterized in that the reinforcing particles are formed from a flexible material

selected from polyamide, polypropylene, polyethylene, styrene butadiene and styrene divinylbenzene.

- 5 8. A cementing composition according to any preceding claim, characterized in that the slurry comprises, by volume, 2% to 15% of dense particles, 5% to 20% of flexible particles, 20% to 45% of cement and 40% to 50% of mixing water.
- 10 9. A cementing composition according to any preceding claim, characterized in that it further comprises one or more additives of the suspension agent, dispersing agent, anti-foaming agent, retarder, setting accelerator, fluid loss control agent, gas migration control agent or expansion agent type.
- 15 10. Application of cementing compositions according to any one of claims 1 to 6 to cementing zones which are subjected to extreme dynamic stresses, such as perforation zones and the junctions of branches of a multilateral well.
- 20 11. Application of cementing compositions according to any one of claims 1 to 6 to the constitution of cement plugs.

PATENT COOPERATION TREATY

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 55.0209	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/EP 00/ 09203	International filing date (<i>day/month/year</i>) 19/09/2000	(Earliest) Priority Date (<i>day/month/year</i>) 07/10/1999
Applicant SOFITECH N.V. et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☒ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PCOMP 00/09203

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C04B28/02 E21B33/13 //(C04B28/02,14:36,16:04)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C04B E21B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, COMPENDEX, EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,Y	FR 2 787 441 A (SCHLUMBERGER CIE DOWELL) 23 June 2000 (2000-06-23) cited in the application claims ---	1-10
Y	EP 0 196 689 A (DOWELL-SCHLUMBERGER) 8 October 1986 (1986-10-08) claim 5 ---	1-10
A	DATABASE WPI Week 198809 Derwent Publications Ltd., London, GB; AN 1988-062204 XP002140512 & SU 1 323 699 A (AKTYUBINSK OIL SURV) cited in the application abstract --- -/--	1,6

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

* & * document member of the same patent family

Date of the actual completion of the international search

13 December 2000

Date of mailing of the international search report

20/12/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
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Authorized officer

Daeleman, P

INTERNATIONAL SEARCH REPORT

International Application No

PCT/JP 00/09203

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>US 5 779 787 A (L.E. BROTHERS, ET ALL) 14 July 1998 (1998-07-14) cited in the application -----</p>	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT 00/09203

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
FR 2787441	A	23-06-2000	AU	1977100 A	12-07-2000
			WO	0037387 A	29-06-2000
EP 196689	A	08-10-1986	FR	2579216 A	26-09-1986
			DE	3660621 D	06-10-1988
			NO	861173 A	26-09-1986
SU 1323699	A	15-07-1987	NONE		
US 5779787	A	14-07-1998	NONE		